Early Temperament and Attachment Security with Mothers and Fathers as Predictors of Toddler Compliance and Noncompliance

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This longitudinal study ($n=106$) examined associations between temperament, attachment, and styles of compliance and noncompliance. Infant negative temperamental reactivity was reported by mothers at 3, 5 and 7 months. Infant attachment was assessed (Strange Situation) at 12 (mothers) and 14 months (fathers). Toddlers’ styles of compliance/noncompliance were measured using two laboratory contexts (cleanup/delay) at 20 months. Results indicated that temperament and attachment predicted toddler behaviour. Toddlers who were secure with mothers and low in temperamental negative reactivity showed more committed compliance than those who were insecure and low in negative reactivity or secure and high in negative reactivity. In addition, interactions revealed that relations between infant–mother attachment and defiance depended on infant–father attachment security, temperament and context. Findings highlight the differential and complex roles of temperament and attachment as potential precursors of later social competence. Copyright © 2013 John Wiley & Sons, Ltd.

Key words: attachment; infancy; compliance/noncompliance; fathers; negative reactivity; toddlerhood

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During toddlerhood, the ability to comply with parents’ requests is critical in the development of social competence (Kuczynski, Kochanska, Radke-Yarrow, & Gimius Brown, 1987) and reflects children’s overall ability to internalize their parents’ requests (Kochanska & Aksan, 1995). Toddlers who have difficulty complying are at an increased risk for developing externalizing problems in early childhood (Kuczynski & Kochanska, 1990). Although some degree of opposition is considered to be a sign of toddlers’ developing autonomy (Forman, 2007), overall rates of compliance should increase over time (Kochanska, Aksan, & Koenig, 1995). In addition, more aversive styles of opposition such as throwing temper tantrums should decrease with age, particularly as toddlers’ use of language can assist them in expressing their wishes in a more regulated manner (Kopp, 1989; Kuczynski et al., 1987).

Although increases in compliance and decreases in noncompliance reflect normative developmental changes, individual differences in these processes are also evident. Individual differences in compliance and noncompliance may be explained by intrinsic and extrinsic factors. To date, however, very few studies have simultaneously included both intrinsic characteristics, such as temperament, and extrinsic characteristics, such as the infant–parent attachment relationship, in the study of individual differences in compliance or noncompliance. Moreover, little attention has been given to how the father–infant relationship might impact toddler compliance and noncompliance, particularly in relation with infant intrinsic factors. Thus, we aimed to test the extent to which children’s temperament and attachment relationships with mothers and fathers during infancy predict later styles of toddler compliance and noncompliance. We expected that both temperament and attachment security would contribute to the development of children’s styles of compliance and noncompliance. Moreover, we examined moderating mechanisms in which both negative temperament and insecure attachment could pose a dual risk (also referred to as the diathesis stress model) for developing more negative outcomes or whether positive aspects of the environment (i.e. secure attachment) help foster more positive outcomes in children at greater intrinsic risk (more negative temperament). This latter mechanism represents the differential susceptibility hypothesis (Belsky, Bakermans-Kranenberg, & van IJzendoorn, 2007). We also examined the degree to which attachment to one parent moderates the effects of attachment to the other parent.

The early toddler years may be a particularly salient time to study compliance because distress peaks at around 20 months of age (Kopp, 1992). In addition, the toddler period represents a time of transition in which the ability to inhibit a desired or dominant behaviour and follow social rules is beginning to emerge (Posner & Rothbart, 2000). By studying individual differences in how children at this age respond to challenging tasks in which they are asked to either do something (e.g. clean up toys) or not to do something (e.g. delay touching a toy), we may better understand why or how children begin to diverge from each other in their ability to follow social demands.

**Styles of Compliance and Noncompliance**

Compliance can be differentiated into two distinct forms: committed and situational (Kochanska & Aksan, 1995; Kochanska, Tjebkes, & Forman, 1998). **Committed compliance** is the wholehearted effort of the child to comply with a request where there is no need for the parent to prompt or remind the child.
Kochanska (2002) reported that committed compliance is the first step in the emergence of internal behavioural regulation or internalization. Situational compliance is observed when a child initially follows directions but needs continued assistance or reminders from parents in order to comply. In other words, situational compliance is the result of external regulation by parents.

Several styles of noncompliance have also been identified (Kochanska & Aksan, 1995). Negotiation is when children attempt to compromise with requests. Simple refusal occurs when children refuse to comply with requests by saying ‘no’ in a non-angry manner. Negotiation and simple refusal are often considered self-assertive and are deemed relatively non-aversive, well-regulated forms of noncompliant strategies (Crockenburg & Litman, 1990). In contrast, when children angrily refuse, whine, struggle, throw toys or push the adult away, they are displaying defiance, which is often considered the most aversive and dysregulated form of noncompliance (Crockenburg & Litman, 1990). Finally, passive noncompliance occurs when children ignore requests despite adult interventions. Although passive noncompliance lacks displays of overt anger and may not seem as aversive, it is still considered a less optimal style of noncompliance than self-assertive reactions because the child is not expressing his or her needs verbally (Hill & Braungart-Rieker, 2002).

Compliance and noncompliance are typically measured using different laboratory contexts in which children are required to engage in either a do or don’t task (e.g. Kochanska & Aksan, 1995; van der Mark, Bakersman-Kranenburg, & van Ijzendoorn, 2002). These tasks are believed to elicit effortful control in which children must suppress a dominant response in order to perform a subdominant response (Rothbart, Ellis, Rueda, & Posner, 2003). In a don’t task, such as delaying gratification, a child must suppress the urge to touch an attractive toy (Kochanska & Aksan, 1995). In a do task, such as in cleaning up novel toys, a child must not only stop playing with the desired toys, she or he must also engage in a new and seemingly less enjoyable task, such as putting them away (Kochanska & Aksan, 1995). Toddlers are less compliant in do tasks versus don’t tasks (Braungart-Rieker, Garwood, & Stifter, 1997; Kochanska & Aksan, 1995) perhaps because do tasks include both a don’t component (e.g. do not play with the toys anymore) plus a do component (e.g. do put the toys in the basket). In addition, compliance in a don’t task shows stability over 16 and 22 months, whereas compliance in a do task does not (van der Mark et al., 2002). Moreover, Kochanska and Aksan (1995) reported only a weak association of committed compliance across do and don’t tasks. Taken together, these findings suggest that do tasks may be more challenging than don’t tasks during toddlerhood, and consistent behavioural strategies take longer to develop during do tasks. The present study included both don’t and do contexts to provide a more comprehensive picture of toddler compliance and how temperament and attachment might relate to tasks that vary in the degree of difficulty.

Temperament

Although numerous conceptualizations exist, temperament is generally thought of as early appearing individual differences in emotional, motor and attentional reactivity as well as the regulation of this reactivity (Rothbart, 2007). Reactivity refers to ‘responses to change in the external and internal environment’ (Rothbart & Sheese, 2007; p. 332). In particular, negative reactivity is often indicated by the frequency, duration and intensity of emotional reactions such as anger, fear or
sadness (Rothbart, 1986). These temperamental differences are biologically based and show relative stability over time but are modifiable by development and experiences in the environment (Rothbart, Ahadi, & Evans, 2000).

Several studies have found direct relations between negative reactivity and compliance (e.g. Braungart-Rieker et al., 1997; Lehman, Steier, Guidash, & Wanna, 2002; van der Mark et al., 2002). For example, Lehman et al. (2002) found that children who were more compliant were rated by their mothers as less temperamentally fearful and angry than those who were less compliant. Similarly, van der Mark et al. (2002) found that fearfulness at 16 months was related to compliance concurrently but not longitudinally from 16 to 22 months. Although not typically examined, there is also evidence that styles of compliance and noncompliance (committed compliance, passive noncompliance and assertiveness) are related to temperamental reactivity, at least concurrently in a sample of 30-month-old toddlers (Braungart-Rieker et al., 1997).

What is less clear from these cross-sectional studies, however, is whether concurrent associations reflect only temporary patterns or whether there are more long-term relations among temperament and compliance. A longitudinal study by Stifter, Spinrad, and Braungart-Rieker (1999) found that greater reactivity to frustration at 5 months was related to more frequent displays of passive noncompliance and defiance at 30 months but only when 5-month regulation was low. Thus, links between temperament and styles of compliance and noncompliance over time may be somewhat complex. The present longitudinal study investigated overall temperamental negative reactivity assessed during infancy and its relation to later styles of toddler compliance and noncompliance. We also examined whether the effect of negative reactivity on the development of compliance may depend on extrinsic factors, such as the parent–infant attachment relationship. Thus, both temperament and attachment may be important to consider when studying children’s developing abilities to effortfully control their behaviour.

**Attachment**

*Attachment* reflects an affective bond that forms between an infant and caregiver (Bowlby, 1969). According to Bowlby (1969), the process of developing attachment relationships takes time and requires infants to have reached a certain level of cognitive maturity and to have experienced enough of a history with the attachment figure to be able to form an attachment. Individual differences in attachment security have been attributed to variation in the quality of the caregiving environment, particularly the degree to which infants’ receive sensitive and responsive parenting (Nievar & Becker, 2008; de Wolff & van Ijzendoorn, 1997).

Research on the associations between infant attachment security and later toddler compliance is modest, inconsistent and generally limited to mother–infant dyads (Kochanska, Aksan, & Carlson, 2005). Some evidence suggests that infants who are secure show higher rates of cooperation with mothers than those who are insecure (Ainsworth, Bell, & Stayton, 1974; van Bakel & Riksen-Walraven, 2002; Londerville & Main, 1981). Other evidence also suggests, however, that toddlers high in defiance initiate more positive interactions with their mothers than toddlers who are low in defiance (Dix, Stewart, Gershoff, & Day, 2007), indicating that security also allows toddlers to feel comfortable in expressing their needs to attachment figures in both positive and negative manners (Sroufe, Fox, & Pancake, 1983). Such mixed findings suggest that links between attachment and
compliance are more complex. Thus, further research is needed that examines associations between attachment and later toddler compliance and noncompliance and whether those associations depend on temperamental characteristics.

It is also important to recognize that infants have attachments to fathers and mothers. Previous research has suggested that mother–infant and infant–father relationships develop in a different manner (Braungart-Rieker, Garwood, Powers, & Notaro, 1998; Parke, 1995, 2000). Historically, mothers typically spend more time with their children and take on a larger role when it comes to comforting and everyday care of children than fathers, whereas fathers are relatively more involved in play with their children (Parke, 1995, 2000). These behaviours can contribute to the development of the infant–mother and infant–father attachment relationship, but perhaps in somewhat different ways. In addition, mothers are often the primary attachment figures during infancy and early childhood (Bretherton, Lambert, & Golby, 2005), which could, in turn, affect the impact that attachment security has on early socialization. In other words, attachment with mothers may be more influential on toddlers’ social competence than is attachment with fathers. There is some evidence to suggest, however, that both mothers and fathers’ behaviours contribute to the development of compliance. Mothers and fathers of children who showed more committed compliance were more sensitive (Feldman & Klein, 2003). Although the Feldman and Klein (2003) study did not examine infant–mother or infant–father attachment per se, it is one of the few studies to systematically examine the degree to which children’s rates of compliance reflect early experiences with mothers and fathers. The present study extends previous research by exploring the degree to which the infant–mother or infant–father attachment relationship, either alone or in combination with each other, relates to toddlers’ compliance and noncompliance.

**Temperament, Attachment Security with Mothers and Fathers, and Compliance/Noncompliance**

Research has increasingly examined how temperament serves as a moderator between attachment security with mothers and future outcomes (Burgess, Marshall, Rubin, & Fox, 2003; Kochanksa, 1995; Kochanska et al., 2010; McElwain, Holland, Engle, & Wong, 2012; Stifter et al., 1999). For example, Burgess and colleagues (2003) reported that externalizing behaviour problems were greater when infants had both an avoidant attachment with mothers and an uninhibited temperament. When examining compliance, Kochanska (1995) found that children, who were rated lower in fear and were securely attached to their mothers, showed more committed compliance. For children rated higher in fear, however, attachment security and committed compliance were not significantly related. Additionally, McElwain and colleagues (2012) found that anger proneness moderated the association between attachment security with mothers and compliance, such that children who were rated as high in attachment security were observed to exhibit more committed compliance if they were also high in anger proneness. Although it is not clear why low fear and security in one study leads to greater committed compliance, whereas high anger and security in another study also leads to greater committed compliance, results of both studies suggest that characteristics that are intrinsic to the child (e.g. temperament) impact how infant–mother attachment security relates to compliance. Because temperament represents a stylistic expression of behaviour, it is important to consider behaviours beyond committed compliance. For example, when committed
compliance is low, negative dimensions of temperament could differentially predict different styles of noncompliance.

To our knowledge, only two studies have examined associations between compliance, temperament and the attachment relationship with both mothers and fathers (Kochanska et al., 2005; Volling, Blandon, & Kolak, 2006). Kochanska and colleagues (2005) found that for mother–infant dyads, secure attachment predicted child receptive cooperation (a composite of committed compliance and positive social behaviour). For father–infant dyads, however, the associations among factors were more complex. Infant anger and cooperation were inversely related but only for infants who were insecure with fathers, such that infants who were insecure with fathers and high in anger were less likely to be cooperative. Finding somewhat different results in their cross-sectional study, Volling et al. (2006) found that toddlers who were securely attached to mothers showed more committed compliance but only when attachment was insecure with fathers. Although the results from these two studies tell a somewhat different story, they suggest that the development of compliance appears to be affected by temperament and the quality of attachment relationships with mothers and fathers in different ways. These studies did not examine, for example, the degree to which temperament moderates the associations between attachment security and other forms of compliance/noncompliance. Thus, it is apparent that more research is needed to examine these associations.

A low score in committed compliance informs us that toddlers are not wholeheartedly following parents’ requests, but it does not tell us if toddlers are able to display at least some levels of compliance (situational compliance) or if they are displaying passive noncompliance or defiance. These styles of responding have important implications for future social competence because children who are more defiant as toddlers are at greater risk for externalizing problems by age five (Kuczynski & Kochanska, 1990). Thus, the present study extends previous research by examining the role of temperamental negative reactivity and attachment security with both mothers and fathers in relation to styles of compliance and noncompliance across two tasks (don’t versus do).

Present Study

In the present study, we examined relations between early infant temperamental negative reactivity at 3, 5 and 7 months, infant attachment security at 12 months with mothers and 14 months with fathers, and toddler compliant and noncompliant behaviours at 20 months. We assessed temperament in early infancy as an attempt to examine early appearing and more biologically driven aspects of infant characteristics (Rothbart & Bates, 2006). Attachment was assessed later in infancy because attachment takes time to develop and becomes more solidified by the end of infants’ first year of life (Bowlby, 1969). Lastly, we measured compliant and noncompliant behaviours during two tasks (clean-up and delay) at 20 months because distress is found to peak at around 20 months of age (Kopp, 1992), and the toddler years are a salient time to measure compliance and noncompliance (Posner & Rothbart, 2000).

Hypothesis 1

Previous research has found that toddlers often display more committed compliance in don’t tasks compared with do tasks. Therefore, we anticipated that there would be differences in the level of compliance during the clean-up (do)
versus delay (don’t) task due to the fact that the two tasks require differing types of
effortful control (Braungart-Rieker et al., 1997; Kochanska & Aksan, 1995).

Hypothesis 2

We expected that a combination of intrinsic (i.e. infant temperament) and
extrinsic (i.e. infant–parent attachment) factors would best predict toddler styles
of compliance and noncompliance rather than either one of these constructs alone.
Children with secure attachments may be more likely than children with insecure
attachments to endorse parent commands and comply with parents’ requests
because they have typically been met with responsive and sensitive caregiving
in the past (Ainsworth et al., 1974; Ainsworth, Blehar, Waters, & Wall, 1978;
compliance or noncompliance is expressed, however, might depend on toddlers’
temperamental negative reactivity. Toddlers who are high in negative
temperamental reactivity may have a more difficult time in regulating their
behaviour, regardless of whether they are complying with a request. Thus, a secure
and temperamentally reactive child may be more likely to show situational over
committed compliance, whereas an insecure and temperamentally reactive child
may be more likely to display defiance over passive noncompliance.

Hypothesis 3

It is also possible, however, that patterns among temperament, attachment and
compliance are more complex than this. During toddlerhood, striving for
autonomy is considered to be a developmentally appropriate goal (Dix et al.,
2007; Forman, 2007). Thus, secure infants may also show noncompliant behaviour
(Dix et al., 2007) because they are more confident in expressing their indepen-
dence. Therefore, we predicted that if secure infants expressed noncompliance, it
would be in a less aversive manner, such as passive noncompliance.

Hypothesis 4

In addition, children can differ in their attachment security with mothers
versus fathers. Having a secure attachment relationship with one parent,
particularly the mother, may buffer the negative effects of having an insecure
attachment relationship with the other parent (Kochanska et al., 2005; Main,
1999). On the other hand, having secure attachment relationships with both
parents might be optimal (Howes, 1999; Kochanska et al., 2005) and lead
toddlers to develop more compliant or favourable strategies when faced with
emotionally challenging situations. Given that studies have not simultaneously
examined the degree to which attachment with mothers and fathers as well as
infant temperament predicts various specific styles of compliance and
noncompliance in a longitudinal manner, our investigation of these patterns
is somewhat exploratory.

METHOD

Participants

The total sample consisted of 135 infants (52.6% female) and their parents who
were recruited from a local community. Several methods of recruitment were used:
a child birth educator announced the study to her classes, flyers were sent home to
new mothers from the hospital, business cards were distributed to various local community locations and an informational booth was set up at several local community events. Infants who were premature (e.g. birth weight < 5.5 lbs; gestational age < 37 weeks) were excluded from participating in the current study.

The family’s first laboratory visit occurred when the infant was 3-months old (+/- 14 days); the remaining visits took place when the infants were 5, 7, 12, 14 and 20 months of age. All infants were full-term, healthy and without any birth complications. The majority of parents were European American (mothers: 90.4%; fathers: 87.4%). Mothers were on average 29.3 years of age (SD = 5.32; range = 17 to 44), and fathers on average were 30.7 years of age (SD = 5.62; range = 18 to 44). Most parents (86% of mothers and 74.4% of fathers) reported completing at least some college. The distribution of the remaining education levels were as follows: 3% of mothers and 6% of fathers reported completing some trade school, 10.3% of mothers and 16.4% of fathers reported completing some high school, and 1% of mothers and 2% of fathers reported completing less than ninth grade. The sample also had variability in family income: 5.3% reported less than $15,000, 9.9% reported $15,000–$29,999, 22.1% reported $30,000–$44,999, 24.4% reported $45,000–$59,999, 20.6% reported $60,000–$74,999, 6.1% reported $75,000–$89,999 and 9.2% reported $90,000 or more. The living arrangement of parents were as follows: 84.4% of the parents were married and living together, 2.2% were married and living apart, 11.9% of the parents were not married and living together and 1.5% of the parents were unmarried and living apart.

Attrition for the sample was moderate (21.5%) from the first time point (3 months) to the last time point (20 months). Statistical comparisons between the portion of the sample with complete data from 3 to 20 months (n = 106) and the entire sample (n = 135) along different demographic variables (e.g. parent education, age, ethnicity and income) revealed four significant demographic differences. Compared with families who dropped out of the study, families in the present sample had higher education levels (mothers: equal variances not assumed: F = 12.28, p < .001; t(34.74) = 2.51, p < .05, Cohen’s d = .59: M = 6.91, SD = 1.57 vs M = 5.72, SD = 2.40; fathers: equal variances not assumed: F = 5.88, p < .05, t(37.98) = 2.64, p < .05, Cohen’s d = .59: M = 6.62, SD = 1.98 vs M = 5.28, SD = 2.53), were older (mothers: t(133) = 4.03, p < .001, Cohen’s d = .85: M = 30.25, SD = 5.08 vs M = 26.00, SD = 4.88; fathers: t(133) = 2.71, p < .01, Cohen’s d = .55: M = 31.46, SD = 5.37 vs M = 28.34, SD = 5.95), were more likely to be European American (mothers: χ²(1) = 8.93, p < .01, φ = .26: 94.3% vs 75.8%; fathers χ²(1) = 7.54, p < .01, φ = .24: 91.5% vs 72.4%) and had higher incomes (t(129) = 2.82, p < .01, Cohen’s d = .57: M = 4.48, SD = 1.86 vs M = 3.34, SD = 2.11). Thus, findings from this longitudinal study (n = 106) pertain to a population that is on average more educated, a little older, with fewer minorities and with higher incomes than the original sample (n = 135).

Procedures

3, 5 and 7 months

One week before each scheduled laboratory visit, parents received a packet of questionnaires in the mail, including a measure of temperament (mother report). Parents returned the completed questionnaires at each laboratory visit. Data from the laboratory visit at 3, 5 and 7 months and questionnaire data, other than mother report of temperament at 3, 5 and 7 months, were not used in the present study. All tasks at each laboratory visit were video recorded. Behaviours from the laboratory
tasks at 3, 5 and 7 months involved those from the Still-Face Paradigm (Tronick, Als, Adamson, Wise, & Brazelton, 1978) with mother–child and father–child dyads but were not examined in the present study.

12 and 14 months

The Strange Situation (Ainsworth et al., 1978) was administered at 12 months with mothers and 14 months with fathers. The order of the parents was not counterbalanced because previous research found no indication of order effects with at least a 4-week separation between assessments (Belsky, Rovine, & Taylor, 1984; Easterbrooks & Goldberg, 1984). Previous studies have even chosen as large as 6 months between assessments of infant–mother and infant–father attachment (Steele, Steele, & Fonagy, 1996). We chose a 2-month separation between mother–child and father–child laboratory visits at 12 and 14 months in order to fully ensure that there was no carryover or sequencing effects. The Strange Situation was designed to elicit attachment behaviours in infants and involves seven 3-min episodes. The parent and infant are alone in the observation room (Episode 1). A stranger enters the room, talks to the parent and then plays with the infant (Episode 2). The parent departs and leaves the infant and stranger together in the observation room (Episode 3: first separation). The parent returns and the stranger exits (Episode 4: first reunion). Next, the parent says ‘bye-bye’ and departs the observation room, leaving the infant alone (Episode 6: second separation). The second reunion (Episode 7) is the same as Episode 4.

20 months

A clean-up task (e.g. Hill & Braungart-Rieker, 2002; Kochanska & Aksan, 1995) was administered with the mother and father present. A basket of various toys were placed in the middle of the large carpeted floor of the room. Parents were instructed to play with their child until they heard a bell and do what they would normally do to get their child to clean-up the toys. The play period lasted 5 min, and the clean-up period lasted no longer than 3 min. Only behaviours during the clean-up period were coded.

Following the clean-up procedure, a delay of gratification task (e.g. Braungart-Rieker et al., 1997; Vaughn, Kopp, & Krakow, 1984) was administered with the mother and father present. Toddlers were placed in a high chair facing a table, and each parent was seated on either side of toddler. The experimenter placed an enticing toy that made noise and lit up when touched in front of the toddler and instructed him or her not to play with the toy until the experimenter returned. Parents were instructed to do what they would normally do to get their child not to touch something but to also refrain from moving the toy away from their child’s reach. The episode lasted for 2 min. Other procedures during this laboratory visit were not examined in the present study because they did not involve eliciting compliance or noncompliance.

Measures

Infant temperament

Infant temperament was measured via the Infant Behavior Questionnaire—Revised (IBQ-R; Gartstein & Rothbart, 2003), a commonly used 191-item questionnaire that asks parents to rate the infant on a 7-point Likert-type scale. Mothers completed the measure at 3, 5 and 7 months. Items are phrased in the form of questions about the infant’s behaviour in a given context during the past 1 or 2 weeks, and ratings refer to the frequency of behaviour. For example, ‘When being carried in the past week,
how often did the baby push against you until put down? The IBQ-R consists of 14 subscales, four of which reflect a larger factor (or composite) called 'Negative Reactivity', and includes fear, distress to limitations, recovery and sadness (Putnam, Rothbart, & Garstein, 2008).

Cronbach’s alphas ranged from .63 to .72 for the negative reactivity scales at 3, 5 and 7 months. In addition, correlations across age ranged from .55 to .76. We subsequently created an overall negative reactivity score by averaging each score. A median split was performed on composite scores to create high and low groups to be used as potential predictors in later analyses of variance (ANOVAs). One infant who fell on the median (2.97) was placed in the low reactivity group.

**Infant attachment security**

On the basis of their interactive behaviour during the Strange Situation, infants were classified into one of four major groups: insecure-avoidant (A), secure (B), insecure-resistant (C) and disorganized (D)/secondary ABC categorization (see Ainsworth et al., 1978; Main & Cassidy, 1988, for scoring procedures). Infants received one attachment classification with their mothers and another classification with their fathers. A team from the University of Minnesota, headed by Dr Elizabeth Carlson, coded all tapes and assessed inter-rater reliability by double coding 16% of the total assessments with mothers and 17% with fathers. There was 90% agreement with $\kappa = .84$ for mothers and 80% agreement with $\kappa = .71$ for fathers.

For the present study, two attachment categories were used: secure infants (B) and insecure infants (A and C). Infants classified as disorganized were forced into their secondary classification (e.g. Lyons-Ruth, Repacholi, McLeod, & Silva, 1991; Martins & Gaffan, 2000) as secure (mothers: $n = 4$; fathers: $n = 10$) or insecure (mothers: $n = 12$; fathers: $n = 9$). The frequencies of the secure and insecure categories are comparable with middle class, low-risk samples (e.g. Hill & Braungart-Rieker, 2002). In this sample, 79.2% ($n = 84$) infants were secure with mothers, 20.8% ($n = 22$) were insecure with mothers, 78.3% ($n = 83$) were secure with fathers and 21.7% ($n = 23$) were insecure with fathers. A chi-square test revealed that the attachment classifications for infant–mother versus infant–father dyads were not significantly related to one another.

**Compliance and noncompliance**

Coders rated the toddlers’ compliance and noncompliance from videotapes of the delay of gratification task and the clean-up task. Coders rated six forms of compliance and noncompliance every 10 s (0 = present, 1 = absent). On the basis of coding schemes developed and used in previous studies (e.g. Hill & Braungart-Rieker, 2002; Kochanska & Aksan, 1995; Kuczynski et al., 1987), several forms of compliance and noncompliance were coded. *Committed compliance* was coded when children enthusiastically endorsed their parents’ request by either not touching the toy (delay) or picking up the toys (clean-up). *Situational compliance* was coded when toddlers cooperated with their parents’ requests but needed prompting. *Passive noncompliance* was coded when children ignored their parents’ requests despite parental interventions. *Defiance* was coded when toddlers angrily refused, whined, struggled, threw toys or pushed parents away. *Negotiation* was coded when toddlers tried to compromise with their parents’ requests (e.g. Can I clean up in a little bit?). *Simple refusal* was coded when toddlers refused to comply with their parents’ requests by saying ‘no’ in a non-negative tone. Because language skills are somewhat immature and limited at 20 months
of age, however, we restricted our subsequent analysis to the four more common forms of compliance and noncompliance: committed compliance, situational compliance, passive noncompliance and defiance.

Compliance and noncompliance behaviours were mutually exclusive. However, it was possible to observe both compliance and noncompliance within a given 10-s interval. We chose to adopt a somewhat conservative but balanced set of criteria for how to resolve such a scenario. In order to receive a 1 for committed compliance, the child could not have displayed any other behaviour within that interval, which reflects a consistent, wholehearted effort to comply. If, however, a toddler predominately showed situational compliance but also exhibited some noncompliance, she or he would receive scores of 1 for both behaviours during that interval, giving credit for attempting to comply but also acknowledging the brief instance of noncompliance (Hill & Braungart-Rieker, 2002). If the toddler predominately showed noncompliance but only a brief display of compliance (e.g. approximately 1 s), she or he was not given credit (e.g. earned a 0) for that instance of compliance in that interval. Gold standard coders coded 15% of the sample, resulting in Cohen’s kappas ranging from .89 to .99 for the clean-up task and .86 to .94 for the delay of gratification task.

The proportions of time that children exhibited each form of compliance and noncompliance were calculated by summing the number of intervals in which a behaviour occurred and dividing by the total number of intervals (e.g. clean-up task: \( n = 18 \); delay task: \( n = 12 \)). Thus, proportion scores were created for committed compliance, situational compliance, passive noncompliance and defiance in each task. Because the raw proportion scores reflected a non-normal distribution, variables were log transformed (Afifi, Clark, & May, 2004).

RESULTS

Results are presented in two parts. First, descriptive statistics are reported for all study variables along with analyses examining potential associations with demographic variables and zero-order associations between the study variables. Second, the results that tested our first hypothesis, which involved examining the effects of context on compliance and noncompliance, are presented. Third, we presented the results that tested our main hypotheses, which involved examining the extent to which early infant temperament and infant–parent attachment security are related to later toddler compliance and noncompliance.

Descriptive Statistics and Preliminary Analyses

Means, standard deviations, skewness and kurtosis of the variables are presented in Table 1. Analyses examining relations between the study variables with infant gender, parent education, cohabitation status, parent ethnicity, parity and family income resulted in six significant effects, which is roughly the amount expected that would be due to chance (.07). Therefore, because of this and because there were no consistent patterns of significant findings with the same demographic variable, no covariates were included in subsequent analyses.

Additional preliminary analyses involving infant attachment security were conducted. Chi-square analyses were used to test the association between infant–mother and infant–father attachment as well as between negative reactivity (low versus high) and parent–infant attachment to mothers and fathers (secure
versus insecure), which revealed no significant patterns. These results indicate that temperament and attachment are relatively independent constructs and that attachment security status is independent across mother–infant and father–infant relationships. A McNemar’s test for paired proportions was also conducted to examine the extent to which the distribution patterns for attachment classifications differed for mother–infant versus father–infant dyads (Braungart-Rieker et al., 2001); this was also non-significant, indicating similar rates of secure and insecure classifications across mother–infant and father–infant dyads.

**Effects of Task Context**

In order to test our first hypothesis, that there would be a difference in the level of compliance between *do* and *don’t* tasks, the effects for context were tested for toddler behaviours in a 2 (Context: delay, clean-up) × 4 (Behaviour: committed compliance, situational compliance, passive noncompliance and defiance) ANOVA. The results yielded a non-significant effect for context. Because there was significant results for the test of sphericity for both the behaviour ($\chi^2(5) = 28.92, p < .0001$) and the Context × Behaviour interaction ($\chi^2(5) = 19.71, p < .0001$), the Greenhouse–Geisser adjustment is reported for those two effects. Results revealed a significant main effect for Behaviour, $F(2.59, 271.73) = 10.95, p < .0001, \eta_p^2 = .09$, and Context × Behaviour interaction, $F(2.67, 280.49) = 63.34, p < .0001, \eta_p^2 = .38$. Follow-up multivariate simple effects tests revealed that toddlers showed more committed compliance (Wilks’ $\lambda$: $F(1, 105) = 34.19, p < .0001, \eta_p^2 = .25$) and defiance (Wilks’ $\lambda$: $F(1, 105) = 54.24, p < .0001, \eta_p^2 = .34$) during the delay than the clean-up, and more situational compliance (Wilks’ $\lambda$: $F(1, 105) = 4.28, p < .05, \eta_p^2 = .04$) and passive noncompliance (Wilks’ $\lambda$: $F(1, 105) = 156.89, p < .0001, \eta_p^2 = .60$) during clean-up than during delay (Table 1).

Zero-order correlations among compliance variables are presented in Table 2. Compliance and noncompliance styles were significantly inversely correlated within task. In addition, several cross-context correlations were significant. Toddlers who showed more committed compliance during the delay task showed more situational compliance and less passive noncompliance during the clean-up task. In contrast, those showing more situational compliance during the delay task showed less committed compliance and more passive noncompliance during clean-up.

Table 1. Descriptive statistics for child variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>$n$</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Infancy</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low negative reactivity</td>
<td>57</td>
<td>53.8</td>
</tr>
<tr>
<td>High negative reactivity</td>
<td>49</td>
<td>46.2</td>
</tr>
<tr>
<td><strong>Toddlerhood</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Committed compliance: clean-up</td>
<td>106</td>
<td>.09 (.07)</td>
</tr>
<tr>
<td>Situational compliance: clean-up</td>
<td>106</td>
<td>.12 (.06)</td>
</tr>
<tr>
<td>Passive noncompliance: clean-up</td>
<td>106</td>
<td>.20 (.07)</td>
</tr>
<tr>
<td>Defiance: clean-up</td>
<td>106</td>
<td>.06 (.05)</td>
</tr>
<tr>
<td>Committed compliance: delay</td>
<td>106</td>
<td>.15 (.10)</td>
</tr>
<tr>
<td>Situational compliance: delay</td>
<td>106</td>
<td>.10 (.06)</td>
</tr>
<tr>
<td>Passive noncompliance: delay</td>
<td>106</td>
<td>.09 (.07)</td>
</tr>
<tr>
<td>Defiance: delay</td>
<td>106</td>
<td>.14 (.10)</td>
</tr>
<tr>
<td></td>
<td>1.</td>
<td>2.</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------</td>
<td>------</td>
</tr>
<tr>
<td>1. Committed: clean-up</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>2. Situational: clean-up</td>
<td>-0.04</td>
<td>1.00</td>
</tr>
<tr>
<td>3. Passive noncompliance: clean-up</td>
<td>-0.62***</td>
<td>-0.39***</td>
</tr>
<tr>
<td>4. Defiance: clean-up</td>
<td>-0.16†</td>
<td>-0.26**</td>
</tr>
<tr>
<td>5. Committed: delay</td>
<td>0.06</td>
<td>0.20*</td>
</tr>
<tr>
<td>6. Situational: delay</td>
<td>-0.23*</td>
<td>0.06</td>
</tr>
<tr>
<td>7. Passive noncompliance: delay</td>
<td>0.08</td>
<td>-0.11</td>
</tr>
<tr>
<td>8. Defiance: delay</td>
<td>-0.03</td>
<td>-0.16†</td>
</tr>
</tbody>
</table>

†Note: \( p \leq 0.10 \), *\( p < 0.05 \), **\( p < 0.01 \), ***\( p < 0.001 \).
Temperament, Attachment and Compliance/Noncompliance

To examine our main hypotheses examining the degree to which infant negative reactivity, infant–mother attachment, infant–father attachment and interactions among these factors predicted 20-month compliance and noncompliance behaviours, four mixed model ANOVAs were conducted, one for each type: committed compliance, situational compliance, passive noncompliance and defiance. These ANOVA models allow for the examination of the extent to which our categorical predictors (infant negative reactivity, infant–mother attachment and infant–father attachment) contribute to compliance (or noncompliance). Additionally, these models also allow for the examination of differences in context (delay versus clean-up). In each model, the within-subjects factor for context (clean-up versus delay) was included. In addition, three between-subjects factors were included in these ANOVAs: 2 Mother Attachment (secure versus insecure) × 2 Father Attachment (secure versus insecure) × 2 Negative Reactivity group (low versus high). When interaction effects were significant, follow-up paired comparisons were conducted to determine which groups showed significant differences in behaviours. Because main effects for Context were already reported in the previous section, we will not repeat them here.

Committed compliance

The ANOVA for committed compliance revealed a significant main effect for Mother Attachment, $F(1, 98) = 4.13, p < .05$, $\eta_p^2 = .04$, and Context × Mother Attachment × Negative Reactivity interaction, $F(1, 98) = 3.82, p < .05$, $\eta_p^2 = .02$. The father effects were non-significant. Because the significant effects (mother attachment and negative reactivity) depended on Context, paired mean comparisons were conducted for each context (clean-up and delay), respectively. Because the effects for fathers were non-significant, all follow-up tests with committed compliance involve only mother–infant data. See Table 3 for means and standard deviations of the significant effects.

During clean-up, infants who were insecure with mothers and low in negative reactivity showed less committed compliance than infants who were secure with mothers and high in negative reactivity ($t(98) = 2.86, p < .01$, Cohen’s $d = .99$),

Table 3. Means and standard deviations of follow-up paired comparison tests for committed compliance, infant–mother attachment and infant negative reactivity

<table>
<thead>
<tr>
<th>Group</th>
<th>Clean-up</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M$</td>
<td>$SD$</td>
</tr>
<tr>
<td>Committed compliance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother secure, Low negative reactivity</td>
<td>.12$^a$</td>
<td>.07</td>
</tr>
<tr>
<td>High negative reactivity</td>
<td>.09$^b$</td>
<td>.06</td>
</tr>
<tr>
<td>Mother insecure, Low negative reactivity</td>
<td>.06$^c$</td>
<td>.05</td>
</tr>
<tr>
<td>High negative reactivity</td>
<td>.08</td>
<td>.05</td>
</tr>
</tbody>
</table>

Note: Different superscripts within the column for committed compliance during clean-up indicate significantly ($p < .05$) different means.
who in turn, showed less committed compliance than infants who were secure with mothers and low in negative reactivity ($t(98) = -2.11$, $p < .05$, Cohen’s $d = .46$). For the delay task, none of the follow-up comparisons for committed compliance were significant. In addition, the ANOVA involving situational compliance yielded non-significant results.

**Passive noncompliance**

The ANOVA for passive noncompliance revealed a significant Context × Mother Attachment × Negative Reactivity interaction, $F(1, 98) = 5.89$, $p < .05$, $\eta^2_p = .04$. Follow-up comparisons examining group differences within each context, however, revealed marginally significant effects within the delay task and non-significant differences within the clean-up task.

**Defiance**

The ANOVA examining defiance revealed significant main effects for Negative Reactivity, $F(1, 98) = 3.94$, $p < .05$, $\eta^2_p = .04$, a Context × Mother Attachment interaction $F(1, 98) = 6.18$, $p < .01$, $\eta^2_p = .05$ and a Context × Mother Attachment × Father Attachment × Negative Reactivity interaction, $F(1, 98) = 3.83$, $p < .05$, $\eta^2_p = .04$. Follow-up comparisons examining group differences within each context revealed marginally significant effects for the clean-up task and significant effects for the delay task. Infants who are insecure with both parents and high in negative reactivity are more defiant during the delay task than infants who are insecure with both parents and low in negative reactivity ($t(98) = 1.95$, $p < .05$, Cohen’s $d = -2.06$) as well as infants who are secure with both parents and low in negative reactivity ($t(98) = -2.09$, $p < .05$, Cohen’s $d = 2.12$) (Table 4).

**Table 4. Means and standard deviations for follow-up paired comparison test for defiance**

<table>
<thead>
<tr>
<th>Group</th>
<th>Clean-up</th>
<th>Delay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secure with both parents, Low negative reactivity</td>
<td>.06</td>
<td>.12$^a$</td>
</tr>
<tr>
<td>High negative reactivity</td>
<td>.06</td>
<td>.13</td>
</tr>
<tr>
<td>Insecure with both parents, Low negative reactivity</td>
<td>.05</td>
<td>.11$^a$</td>
</tr>
<tr>
<td>High negative reactivity</td>
<td>.04</td>
<td>.27$^b$</td>
</tr>
<tr>
<td>Secure with mother, insecure with father, Low negative reactivity</td>
<td>.05</td>
<td>.12</td>
</tr>
<tr>
<td>High negative reactivity</td>
<td>.09</td>
<td>.15</td>
</tr>
<tr>
<td>Insecure with mother, secure with father, Low negative reactivity</td>
<td>.04</td>
<td>.19</td>
</tr>
<tr>
<td>High negative reactivity</td>
<td>.08</td>
<td>.19</td>
</tr>
</tbody>
</table>

Note: Different superscripts in the delay column indicate significantly ($p < .05$) different means for those groups.

DISCUSSION

This study was the first to address the extent to which infant negative temperamental reactivity and attachment security with mothers and fathers related to later styles of toddler compliance and noncompliance. Results indicated that temperament and attachment predicted styles of toddler compliance and noncompliance. Toddlers who were secure with mothers and low in temperamental negative reactivity showed the highest levels of committed compliance. Complex interactions revealed differences in the processes by which infant attachment security, temperament and context related to defiance. More specifically, relations between infant–mother attachment and defiance depended on infant–father attachment security, infant temperamental negative reactivity and task context.

Styles of Compliance and Noncompliance

Overall, toddlers exhibited more committed compliance and defiance during the delay task and more situational compliance and passive noncompliance during the clean-up task at 20 months of age. In one way, the results are similar to those of other studies (Braungart-Rieker et al., 1997; Kochanska & Aksan, 1995), which show that toddlers display more committed compliance in don’t tasks compared with do tasks. Interestingly, however, the delay task also elicited more defiance that underscores the importance of examining styles of both compliant and noncompliant behaviour in children. This may indicate that a delay task, in which there is a very enticing but forbidden toy within reach, represents a more emotionally charged context than one in which the child must put a number of toys into a basket. If the child does not want to comply during delay, it may lead to a more angry display of noncompliance.

Consistency in toddler behaviour across contexts was also somewhat modest (Kochanska & Aksan, 1995), possibly because at 20 months, toddlers have yet to attain consistent, successful effortful control strategies (Hill-Soderlund & Braungart-Rieker, 2008; Kochanska, Murray, & Harlan, 2000; Kopp, 1989). For example, Kochanska et al. (2000) found that from 22 to 33 months of age, effortful control increased and became more stable. Therefore, compliant and noncompliant behaviours at younger ages may still reflect emerging but not yet fully developed responses to social demands. Nonetheless, individual differences in behaviours during clean-up and delay tasks at 20 months showed predictable patterns based on attachment security and temperamental negative reactivity during infancy.

Direct Effects: Temperament and Attachment

In terms of temperament, infants identified as more negatively reactive showed more defiance, particularly during delay, than infants identified as less negatively reactive. By definition, defiance is observed when infants show overt levels of anger and resistance to parental requests. Thus, even as infants, mothers rated these toddlers higher in temperamental negative reactivity. Although longitudinal studies examining toddler defiance and infant temperament are sparse, our results converge with those of Stifter et al. (1999). In their study, infants who were 5-months old that were rated as more frustrated and less regulated in a laboratory condition showed a higher rate of defiance at 30 months of age. Thus, infant temperament seems to be related to more emotionally reactive styles of noncompliance.

Attachment was also related to styles of compliance—at least for infant–mother dyads. Across both clean-up and delay contexts, toddlers who were securely attached to their mothers as infants showed more committed compliance than
toddlers who were insecurely attached with mothers. This is similar to Hill and Braungart-Rieker’s (2002) finding that infants who were securely attached to mothers were more committed during a clean-up task at 36 months of age. Previous research has consistently shown that mothers of secure infants are more attuned to their infants’ emotional needs (Ainsworth et al., 1978; Braungart-Rieker et al., 2001). Indeed, studies examining links between maternal sensitivity, attachment and emotion regulation have found that sensitive caregiving and security of attachment promote more optimal forms of regulation in other infant–mother contexts such as the Still-Face Paradigm (Braungart-Rieker et al., 2001; Carter, Mayes, & Pajer, 1990). Thus, toddlers with a stronger sense of felt security with mothers are more likely to develop more internalized styles of compliance.

Attachment to fathers, however, was not significantly predictive of compliance. The effects of infant–father attachment on toddler noncompliance, specifically defiance, depended on other factors, such as infant–mother attachment and infant negative reactivity. This finding adds to the limited literature on the role of the father in the development of compliance during toddlerhood, suggesting that an infant’s attachment with his or her father needs to be understood within the broader family context (Kochanska et al., 2005; Volling et al., 2006).

Moderating Effects: Temperament and Attachment Security with Mothers and Fathers

More complex interactions between infant–mother attachment security, negative temperamental reactivity and task context (clean-up versus delay) were also found. Specifically, committed compliance during the clean-up task was highest for toddlers who were low in negative reactivity and secure in their attachment with mothers as infants. These findings are consistent with previous work reporting that children rated lower on the more specific dimension of temperamental fearfulness showed more committed compliance, if they were securely attached to mothers (Kochanksa, 1995). Thus, having a less reactive temperament coupled with a higher quality caregiving environment appears to enable toddlers to develop more optimal ways of responding to the demands of their social environment.

In addition to infants who were low in negative reactivity, results from our study also showed that infants high in negative reactivity benefitted from having a secure attachment. This pattern of results supports a differential susceptibility model rather than a dual-risk model (Belsky et al., 2007) in which children with higher intrinsic risk particularly benefit from more positive caregiving environments. In contrast, results from Kochanksa’s (1995) study indicated that attachment security did not seem to have an effect on committed compliance for infants who were high in fearfulness. It is possible that studying only one component of negative reactivity such as fearfulness provides certain insights about the development of internalization, whereas studying a broader dimension of negative reactivity provides additional information. Regardless of attachment security, having a more fearful temperament may serve as a motivating mechanism that encourages toddlers to obey parental commands (Kochanksa, 1995). In contrast, children higher in anger, sadness and other elements of distress may need more assistance in managing and regulating their behaviour and thus particularly benefit from having a higher quality caregiving environment. Future research should further study how attachment security, and other extrinsic factors might moderate the various emotional dimensions of temperament in different ways.
Moreover, differences in defiant reactions emerged, depending on negative reactivity, infant–mother attachment, infant–father attachment and context. Toddlers who were high in negative reactivity and insecurely attached to both parents showed more defiance during delay compared with toddlers who were low in negative reactivity and either insecurely or securely attached with both parents. Thus, whereas having a less temperamentally reactive temperament and secure attachment with mothers promotes committed compliance, having a more negatively reactive temperament and insecure attachment with both parents promotes defiance. Interestingly, this pattern of results supports the dual-risk model over the differential susceptibility model (Belsky et al., 2007). Although rarely studied, our results converge with one other study of infant temperament and attachment with mothers and fathers. Kochanska et al. (2005) found that for infant–mother and infant–father dyads, attachment insecurity and high anger contribute to low rates of compliance with that parent. Our findings add to the limited research on the contribution of infant–father attachment security to later toddler compliance and suggest that this linkage is dependent on infant temperament as well as the infant–mother attachment relationship. Our findings support the need to further examine the linkages between infant–parent attachment security to later styles of compliance and noncompliance.

In our study, we did not find patterns between attachment and temperament for situational compliance and passive noncompliance. Compared with situational compliance and passive noncompliance, committed compliance and defiance might represent more extreme behaviours on the continuum of compliance to noncompliance. Indeed, previous research has suggested that individual differences in styles of compliance and noncompliance might follow varying developmental trajectories (Kochanska & Aksan, 1995; Kuczynski & Kochanska, 1990). In addition, temperament and/or attachment might become stronger predictors of more subtle styles of compliant and noncompliant behaviours as children become older. For example, Stifter et al. (1999) reported that infants who were higher in negative reactivity demonstrated more passive noncompliant behaviours during a clean-up task at 30 months than infants who were lower in negative reactivity. Further exploration is needed to examine the extent to which temperament and attachment with mothers and fathers contribute to varying developmental trajectories of compliance and noncompliance behaviours.

Limitations and Future Directions

There are several limitations to the present study related to our sample. First, given our relatively small sample size, effect sizes were somewhat small, and interpretation of complex interactions must be carried out so with caution and requires future replication. Second, our sample is predominately middle class. Because previous research has suggested that infants from low-income families have a greater risk of being insecurely attached to their parents (Fish, 2004), our study may not generalize to economically disadvantaged populations. Future studies should examine these relationships in a more diverse sample. Third, our study is limited to processes taking place early in toddlerhood; additional work is needed that examines how these processes change as toddlers develop more consistent strategies (e.g. Kochanska et al., 2000) and as the development of effortful control becomes more solidified during the preschool period (Posner & Rothbart, 2000).

There are also limitations to our methodology. First, mothers were the only raters of their infants’ temperament. In previous research, mothers and fathers’ perceptions of their infants’ temperament are only moderately correlated (Parade
& Leerkes, 2008), which might explain the lack of significant findings with infant–father attachment. Therefore, future studies should take into consideration both mothers’ and fathers’ ratings of their infants’ temperament. Second, our compliance tasks were conducted in triadic contexts in which mothers, fathers and toddlers were all interacting simultaneously, which allow us to investigate the dynamic family interaction. However, teasing apart the possible processes linking infant–mother and infant–father attachment with responses to each parent separately is not possible. Thus, we are less able to ascertain how our findings might be different from studies that measure toddler compliance and noncompliance to mothers and fathers separately. Future research should examine associations between toddler compliance and noncompliance with mothers versus fathers. Third, we did not assess which parent was the primary caregiver in the household. Although mothers are typically primary caregivers (Marsiglio, Amato, Day, & Lamb, 2000; Parke, 2000), it is possible that some fathers serve as primary or at least highly involved caregivers. Such a distinction could impact the degree to which attachment to mother versus father relates to compliance and noncompliance.

Conclusions and Implications

Results from the present study extend previous cross-sectional work linking aspects of temperament to compliance (e.g. Lehman et al., 2002; van der Mark et al., 2002) by examining these associations longitudinally and by including multiple styles of compliance and noncompliance as well as the infant–father attachment relationship. In addition, complex interactions involving infant–mother attachment, infant–father attachment and infant negative reactivity also imply that there may be different pathways by which toddler compliance develops (Kochanska, 1995). Future research is needed to further elucidate these processes.

Moreover, having a secure infant–parent attachment relationship appears to buffer the potentially negative effects of developing more aversive styles of noncompliance (defiance), even if infants are more temperamentally negatively reactive. Subsequently, toddlers who more fully endorse parents’ attempts to socialize them or who show more effective ways of asserting their autonomy should show more optimal patterns of development (Kuczynski & Kochanska, 1990). Findings from this study further our understanding of how infant temperament and the differential and complex roles of mother–infant and father–infant attachment relationships impact children’s later socialization.

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